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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,168	05/14/2007	Franck Bouquerel	1022702-000307	5101

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BUCHANAN, INGERSOLL & ROONEY PC  
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EXAMINER
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LISTVOYB, GREGORY

ART UNIT	PAPER NUMBER
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1765

NOTIFICATION DATE	DELIVERY MODE
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06/09/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
offserv@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/583,168	<b>Applicant(s)</b> BOUQUEREL ET AL.	
	<b>Examiner</b> GREGORY LISTVOYB	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 29-57 is/are pending in the application.
- 4a) Of the above claim(s) 53 and 54 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-52 and 55-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/22/2011 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-35, 37, 39-41, 43-52 and 55-57 rejected under 35 U.S.C. 103(a) as being unpatentable over Myard et al (WO 03/029350 cited in IDS, document cited with equivalent US 7323241).

Regarding Claims 29-33, Myard discloses a precursor article of a composite material comprising a polymeric matrix and at least one reinforcing yam and/or fibers and the article comprising at least one reinforcing yam and/or fibers and at least one polymeric-matrix yam and/or fibers (see Claim 1), where:

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the reinforcing yarn and/or fibers are made of reinforcing material and optionally include a part made of a thermoplastic polymer (linear polyamide, such as PA4,6, PA 6, etc, see claim 10, meeting the limitations of claims 43-44 and 55-56)

the polymeric-matrix yarn and/or fibers are made of a thermoplastic polymer (polyamide, see claim 1).

Regarding structure (1) claimed in claim 29, Myard teaches star-polyamide. This structure is not prohibited by the above claim, because A is defined as an aliphatic hydrocarbon radical, which can optionally include heteroatom.

Myard discloses that the star-polymer above formed the the reaction of the following components (see Column 4, line 15):

a) monomers of following general formula (I):



b) monomers of following general formulae (IIa) and (IIb):



c) optionally monomers of following general formula (III):



in which:

$\text{R}_1$  is an aliphatic or aromatic, cyclic or linear, hydrocarbonaceous radical comprising at least 2 carbon atoms which can comprise heteroatoms,

$\text{A}$  is a covalent bond or an aliphatic hydrocarbonaceous radical which can comprise heteroatoms and which comprises from 1 to 20 carbon atoms,

$\text{Z}$  represents a primary amine functional group or a carboxylic acid functional group,

$\text{Y}$  is a primary amine functional group when  $\text{X}$  represents a carboxylic acid functional group or

$\text{Y}$  is a carboxylic acid functional group when  $\text{X}$  represents a primary amine functional group,

$\text{R}_2$  and  $\text{R}_3$ , which are identical or different, represent substituted or unsubstituted, aromatic, cycloaliphatic or aliphatic hydrocarbonaceous radicals comprising from 2 to 20 carbon atoms which can comprise heteroatoms,

$m$  represents an integer between 3 and 8.

Myard further discloses that multifunctional monomer of formula (1) is blended with a molten polymer during an extrusion operation (see Column 4, line 65).

It means that on the first stage linear precursor polymer is formed. The monomers IIa and IIb are identical to one of the Application examined (see Claim 35 of the Application), meeting the limitations of claim 57. Therefore, Myard's and Application's precursor polymer have identical structures.

Note that structure (II) of claims 29-31 is not required, since 0% mol content of this structure is included.

Myard does not disclose the claimed structure in his examples.

However, according to MPEP 2123, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (see also *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) , *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Therefore, it would have been obvious to a person of ordinary skills in the art to use strcuture (I) of claim 29 in Myard's precursor polymer, since it is clearly disclosed by the reference.

Regarding Claim 34, Myard teaches R2 as a pentamethylene radical (i.e. e-caprolactam derivative, see Example 1, where modified polycaprolactam PA6 is disclosed, see Column 7, line 25).

In reference to claim 35, Myard teaches structure IIIb (see Column 4, line 30).

Regarding claims 37 and 41, Myard discloses that the polyamide is obtained by melt-blending (extrusion) of the polymer with a reactive monomer (see Claim 4).

In reference to claim 45, Myard teaches flame retardants, stabilizers, etc (see Column 6, line 5).

Regarding Claims 46-47, Myard teaches reinforcing yarns, such as natural yarn, hemp or flax yarns (see Column 6, line 15).

In reference to claims 48-49, Myard claims powdered polyamide (see Column 6, line 20).

Regarding claims 50-52, Myard teaches a continuous or chopped yarns and a composite, made by at least partial melting of the matrix yarn (see Column 6, lines 25 and 30) and the level of reinforcing material by weight of between 25 and 80% (see Column 6, line 45).

Claims 29-52 and claim 57 rejected under 35 U.S.C. 103(a) as being unpatentable over Thoma et al (US 3893981).

Thoma discloses the formation of a polymer matrix that has recurring structural units that have close structural similarities to the generic formula (I) of present claim 29. See for example, column 4, lines 32-60. Also, Thoma discloses the polycondensation of monomers that are of the same type as those disclosed by applicants as being suitable, such as lactams. Accordingly, the examiner has reason to believe that the resultant polymer is the same as or substantially similar to that claimed by applicants, and would

have the same properties as the polymer of the generic formula (I), meeting the limitations of claims 33 and 57.

In particular, Claim 35 of Application examined claims a reaction product of diamine or dicarboxylic acid and lactam. Thoma discloses a reaction product of lactam (see Column 3, line 30), dicarboxylic acid (see Column 3, line 45) and small amount (0.1-5 mol%, see Abstract) of triamine (see Column 3, line 40).

Thoma discloses that due to the presence of trifunctional ingredient, the resulting polymer can form both linear or branched structures (see Column 4, line 35).

Note that fragment A of the claimed structure 1 can contain heteroatom.

In addition, Thoma structure is a precursor polymer, because secondary amine in the main chain reacts with dye on the further stage of the Thoma's process (see Column 4, line 45).

"When the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562, F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

"When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not". In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01.



Regarding claim 29, Thoma discloses up to 100 mol% of the polyamide structural units. (See column 2, lines 49-57).

Thoma discloses that his polyamide is obtained by copolymerization from a mixture that includes a difunctional compound that can be a monomer of b) or b'), such as adipic acid, sebacic acid, isophthalic acid or terephthalic acid. Thomas further discloses that this compound is present in an amount of 1.0 to 2.0 mol%. This teaching would render obvious the requirement of claim 30 of between 0.05 and 1 mol%, because the 1 mol% as taught in the prior art is sufficiently close to applicants' upper limit of 1 mol% that the skilled artisan would reasonably expect the properties of the resultant polyamide to be the same or substantially similar. See column 3, lines 45 through column 4, and line 10.

Thoma does not disclose the claimed structure in his examples.

However, according to MPEP 2123, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (see also *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994), *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Therefore, it would have been obvious to a person of ordinary skills in the art to use structure (I) of claim 29 in Thoma's precursor polymer, since it is clearly disclosed by the reference.

Regarding claim 37, the phrase "melt- blending" is drawn to the method of making the polyamide, thereby resulting in a product-by-process claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698,227 USPQ 964,966 (Fed. Cir. 1985). See MPEP 2113. There is no clear difference in the end product, i.e. the yarn of the prior art and that of the present invention. In addition, as set forth above, and incorporated herein, Thoma discloses that the difunctional compound can be present in amount within the claimed range set forth in present claims 39-41. Note Example 1, which teaches the adipic acid present in an amount of about 0.8 wt% with respect to the weight of the polyamide. As to claim 35 and the compound of formula (V), the teaching at column 3, lines 55-62 of Thomas render obvious this requirement.

Regarding claims 50-51, Thoma discloses the formation of articles comprising his yarns, such as textiles and fabrics, or foils. This teaching renders obvious the formation of a felt (claim 38), fabric (claim 41) and a net (claim 42). Therefore, the teachings of Thoma would have rendered obvious the invention as claimed in present claims 29-52.

### ***Double Patenting***

Claims 29-35, 37, 39-41 and 43-52 rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 7323241 to Myard et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because Myard discloses a precursor article of a composite material comprising a polymeric matrix and at least one reinforcing yarn and/or fibers and the article comprising at least one reinforcing yarn and/or fibers and at least one polymeric-matrix yarn and/or fibers (see Claim 1), where:

the reinforcing yarn and/or fibers are made of reinforcing material and optionally include a part made of a thermoplastic polymer (linear polyamide, such as PA4,6, PA 6, etc, see claim 10, meeting the limitations of claims 43-44)

the polymeric-matrix yarn and/or fibers are made of a thermoplastic polymer (polyamide , see claim 1).

Regarding structure (1) claimed in claim 29, Myard teaches star-polyamide. This structure is not by the above claim, because A is defined as an aliphatic hydrocarbon radical, which can optionally include heteroatom.

Myard further discloses that multifunctional monomer of formula (1) is blended with a molten polymer during an extrusion operation (see Column 4, line 65).

It means that on the first stage linear precursor polymer is formed. The monomers IIa and IIb are identical to one of the Application examined (see Claim 35 of the Application). Therefore, Myard's and Application's precursor polymer have identical structures.

Myard does not disclose the claimed structure in his examples.

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However, according to MPEP 2123, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (see also *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971), *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) , *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Therefore, it would have been obvious to a person of ordinary skills in the art to use structure (I) of claim 29 in Myard's precursor polymer, since it is clearly disclosed by the reference.

Note that structure (II) of claims 29-31 is not required, since 0% mol is included.

Regarding Claim 34, Myard teaches R2 as a pentamethylene radical (i.e.  $\epsilon$ -caprolactam derivative, see Example 1, where modified polycaprolactam PA6 is disclosed, see Column 7, line 25).

In reference to claim 35, Myard teaches structure IIIb (see Column 4, line 30).

Regarding claims 37 and 41, Myard discloses that the polyamide is obtained by melt-blending (extrusion) of the polymer with a reactive monomer (see Claim 4).

In reference to claim 45, Myard teaches flame retardants, stabilizers, etc (see Column 6, line 5).

Regarding Claims 46-47, Myard teaches reinforcing yarns, such as natural yarn, hemp or flax yarns (see Column 6, line 15).

In reference to claims 48-49, Myard claims powdered polyamide (see Column 6, line 20).

Regarding claims 50-52, Myard teaches a continuous or chopped yarns and a composite, made by at least partial melting of the matrix yarn (see Column 6, lines 25 and 30) and the level of reinforcing material by weight of between 25 and 80% (see Column 6, line 45).

Claims 29-52 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22-42 of copending Application No. 10/565870.

Application No. 10/565870 claims an abrasion resistant yarn having the same components as ones of the application examined. In particular, Application No. 10/565870 claims 30-100% mol of the structure (I) and 0-70% of the structure (II) (see claim 22).

This is a provisional obviousness-type double patenting rejection.

### ***Response to Arguments***

Applicant's arguments filed 2/22/2011 have been fully considered but they are not persuasive.

Regarding Myard, Applicant submits that use of monomers (IIa) and (IIb), and a blending with a molten polymer during an extrusion operation not necessarily produce a polymer of claimed formula (1).

Examiner disagrees. The monomers above participate in a polymerization, producing linear and star polymers (see Column 4, line 5).

Applicant argues that there is no indication as to why the structures  $(X-R_2-Y)_n$  and  $(Y-R_2-X)_m$  of formula (I), wherein each of  $n$  and  $m$  represent a number between 30 and 200 are formed in Myard's process.

However, Myard applies the same monomers, which expected to produce the same polymeric structure. Regarding a number of monomeric units in the macromolecule, Myard discloses numeric Molecular weight of at least 15000 (see claim 7), which corresponds with the number of monomeric units above.

Regarding Thoma, Applicant argues that the Reference does not teach the structure of formula (1).

Examiner disagrees. Even though Thoma does not openly disclose the polymer of structure (1), the reference applies the same monomers as one of the Application examined in the synthesis process. In fact, Thoma uses lactams, trifunctional amine as well as difunctional monomers in his synthesis.

Applicant repeats the arguments above in reference to Double Patenting rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GL  
/GREGORY LISTVOYB/  
Examiner, Art Unit 1765